UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,607	07/28/2003	Makoto Onodera	62758-047	4276

7590 09/06/2006

McDermott, Will & Emery
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER	
OCHOA, JUAN CARLOS	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/627,607	ONODERA ET AL.	
	Examiner	Art Unit	
	Juan C. Ochoa	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1–6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/28/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1–6 are presented for examination.

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

> A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

3. Where applicable, the abstract should include the following: if a machine or apparatus, its organization and operation.

4. Extensive mechanical and design details of apparatus should not be given.

5. The abstract of the disclosure is objected to because it does not summarize the invention. Correction is required. See MPEP § 608.01(b).

6. Page 22, lines 24–25, include the phrase "she/he must designate the configuration by a plural times". Meaning is unclear.

Claim Objections

7. Claims 1 and 3 are objected to because of the following informalities:

8. Claim 1 includes the misspelled term "therebeween". Examiner interprets as "therebetween" for examination purposes.

9. Claim 1 includes the term "for use in numerical analyzing", meaning is unclear. Examiner interprets as "for use in numerically analyzing" for examination purposes.

10. Claim 3 includes the term "to be use in numerical analyzing, for a configuration model", meaning is unclear. Examiner interprets as "to be used in numerically analyzing, from a configuration model" for examination purposes.

11. Claim 3 page 25, lines 3 and 4 refer to "pair surface", would be better as "pair-surfaces" to avoid any possible antecedent issues.

12. Claim 3 page 25, lines 10 and 11 include the term "in direction of a normal line directing in an inside of the configurations", meaning is unclear. Examiner interprets as "in direction of a normal line towards the inside of the configurations" for examination purposes.

13. Appropriate correction is required.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

15. Claims 1–6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The subject matter description of "shell-model" in the specification amounts to instantiations of "shell-model producing apparatus" and pointers to Japanese Patent Laying-open literature. No definition of "shell-model" is elaborated in the description. For examination purposes, Examiner confused. Should Examiner interpret "shell-model" as "configuration model" as pointed out on page 4, lines 8–10 via "With this, it is possible to obtain the apparatus, being able to produce the analytical shell-model, easily, and as to be the configuration model, as well" or should Examiner interpret "shell-model" as "internal-surface model" as pointed out on page 8, lines 16–30? Invention's possible outcomes enumerated on page 22, lines 11–22, exacerbate Examiner's confusion.

16. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

17. Claims 1–6 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01.

18. Specifically, in claims 1 and 3, the omitted elements are: elements to produce an analytical shell-model as set forth in the claims preambles. Examiner interprets "an internal-surface model" as "an analytical shell-model", as set forth in the claims preamble, for examination purposes.

19. Claim 3 recites the limitation "arbitrary two (2) surfaces" in page 24, lines 30 and 31. There is insufficient antecedent basis for this limitation in the claim. Examiner interprets as "the two (2) surfaces" for examination purposes.

20. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 includes the limitation(s) "wherein said internal-surface model producing means calculates the plate thickness on each of the internal-surface models as targets from the face-to-face distance between two (2) surfaces of the pair, to which a composite surface of the configuration model belongs, being as an original for producing the each internal-surface model, thereby giving this plate thickness value as to be the thickness attribute of the internal-surface model of target", meaning is unclear. Examiner interprets as "wherein said internal-surface model producing means calculates the plate thickness on each of the internal-surface models as targets from the face-to-face distance between two (2) surfaces of the pair" for examination purposes.

21. Dependent claims inherit the defect of the claim from which they depend.

Claim Rejections - 35 USC § 101

22. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

23. Claims 1–6 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

24. Specifically, claims 1 and 3 recite software limitations and therefore the claims are directed to software per se, which are considered non-statutory subject matter. Furthermore, claims recite apparatuses that are not tangibly embodied. The claimed apparatuses lack hardware to enable the functionality of the software limitations to be realized.

25. Specifically, claim 1 does not produce a useful, concrete and tangible result. The claim, not being capable of imparting functionality, fails to reflect any described practical utility. Thus, there would be no "useful" result upon execution. No tangible result claimed, only an abstract idea.

26. Specifically, claim 3 does not produce a useful, concrete and tangible result. The claim, not being capable of imparting functionality, fails to reflect any described practical utility. Thus, there would be no "useful" result upon execution. No tangible result claimed, only an abstract idea. Furthermore, the limitation "an internal-surface producing means for registering the offset-surface seamed by said seam-surface producing means, as in a form of an internal-surface model" reflects intended use and it does not actually produce an internal-surface model.

27. Dependent claims inherit the defect of the claim from which they depend.

Claim Rejections - 35 USC § 102

28. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent

granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

29. Claims 1–2 are rejected under 35 U.S.C. 102(e) as being anticipated by Tonooka, Mitsuhiro (Tonooka hereinafter), U.S. Patent 7,002,575.

30. As to claim 1, Tonooka discloses an analytical shell-model producing apparatus (see "shell-model producing apparatus" as "design supporting apparatus" in col. 3, lines 34–37 and Fig. 1, item No. 10), for producing an analytical shell-model for use in numerical analyzing from a configuration model, which is produced by a three-dimensional configuration modeler, comprising: a reference-plate thickness size inputting means for inputting a reference-plate thickness size to be used when specifying a thin-plate portion from the configuration model (see "reference-plate thickness size" as "graphical elements" and "inputting means" as "assigned by assignment operations by an operator" in col. 3, lines 47–51 and Fig. 1, item No. 14); and means for making two (2) surfaces, being narrower therebetween than the reference-plate thickness size, which is inputted from said reference-plate thickness inputting means, in a pair of surfaces (see "making two (2) surfaces" as "a feature" in col. 3, lines 57–60 and Fig. 1, item No. 18), producing an offset-surface between the pair of surfaces, and producing an internal-surface model by seaming on an outer periphery portion of the offset-surface (see "offset-surface" as "edition face", "between the pair of surfaces" as "between two graphical elements", "internal-surface" as "shell", and "seaming on an outer periphery portion" as "forming a shell on a two-dimensional drawing" in col. 4, lines 44–58 and Fig. 2, item Nos. S7–S10).

31. As to claim 2, Tonooka discloses the analytical shell-model producing apparatus further comprising means for producing a thickness attribute of said internal-surface model from face-to-face distance between the surfaces of said pair and a value of the plate thickness (see "face-to-face distance" as "P_0" to "P_1" in col. 4, line 65 to col. 5, line 14 and Fig. 5).

Claim Rejections - 35 USC § 103

32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

33. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

34. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

35. Claims 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tonooka taken in view of Kawaguchi et al., (Kawaguchi hereinafter), U.S. Patent 7,038,700.

36. As to claim 3, Tonooka discloses an analytical shell-model producing apparatus for producing an analytical shell-model to be use in numerical analyzing (see "shell-model producing apparatus" as "design supporting apparatus" in col. 3, lines 34–37 and Fig. 1, item No. 10), for a configuration model, which is produced by a three-dimensional configuration modeler, comprising: a reference-plate thickness inputting means for inputting a reference-plate thickness size to be used when specifying a thin-plate portion from the configuration model (see "reference-plate thickness size" as "graphical elements" and "inputting means" as "assigned by assignment operations by an operator" in col. 3, lines 47–51 and Fig. 1, item No. 14); a pair-surfaces acknowledging means for acknowledging two (2) surfaces, being equal or less than the reference-plate thickness size (see "making two (2) surfaces" as "a feature" in col. 3, lines 57–60 and Fig. 1, item No. 18), which is inputted by said reference-plate thickness inputting means, in face-to-face distance between the arbitrary two (2) surfaces constructing the configuration model (see "face-to-face distance" as "P_0" to "P_1" in col. 4, line 65 to col. 5, line 14 and Fig. 5); a top/bottom side rib attribute acknowledging means

for acknowledging the pair of surfaces acknowledged by said pair surface acknowledging means to be one of a top side surface, a bottom side surface, and a rib surface (see "top side surface and a bottom side surface" as "a feature" in col. 3, lines 57–60 and Fig. 1, item No. 18); an offset-surface producing means for producing an offset-surface by offsetting a group of surfaces on either the top side or the bottom side, which are acknowledged by said top/bottom side rib attribute acknowledging means, and the rib surface, respectively, (see "offset-surface" as "edition face" in col. 4, lines 44–58 and Fig. 2, item Nos. S7–S10) in direction of a normal line directing in an inside of the configurations thereof; a seam-surface producing means for seaming between the offset-surface, which is produced from either the top or the bottom surface by means of said offset-surface producing means, and also the offset-surface produced from the rib surface (see "offset-surface" as "edition face" and "seam-surface producing means" as "forming a shell on a two-dimensional drawing" in col. 4, lines 44–58 and Fig. 2, item Nos. S7–S10); and an internal-surface producing means for registering the offset-surface seamed by said seam-surface producing means, as in a form of an internal-surface model (see "offset-surface" as "edition face" and "internal-surface" as "shell" in col. 4, lines 44–58 and Fig. 2, item Nos. S7–S10).

37. While Tonooka discloses an analytical shell-model producing apparatus, Tonooka fails to disclose a side rib attribute acknowledging means for acknowledging a rib surface.

38. Kawaguchi discloses a side rib attribute acknowledging means for acknowledging a rib surface. (See col. 8, lines 53–58, and Fig. 9A).

39. Tonooka and Kawaguchi are analogous art because they are both related to CAD/CAE software.

40. Therefore, it would have been obvious to one of ordinary skill in this art at the time of invention by applicant to utilize the acknowledging of a rib surface of Kawaguchi in the system of Tonooka because Kawaguchi develops a morphing method of a structure shape, which can quickly and easily acquire the FEM model of a structure to be analyzed using that of a prototype structure (see col. 2, lines 38–42), and as a result, Kawaguchi reports the following improvement over his prior art: ability to design a new vehicle as a derived vehicle based on existing vehicle models, which are usually stored already in a database, (see col. 2, lines 25–36).

41. As to claim 5, Kawaguchi discloses a dialog top/bottom side rib attribute amending means for amending the top side surface, the bottom side surface and the rib surface, which are acknowledged by said top/bottom side rib attribute acknowledging means, in a manner of dialog. (See col. 13, lines 9–16, and Fig. 10, item No. 101).

42. As to claim 6, Tonooka discloses calculating the plate thickness on each of the internal-surface models as targets from the face-to-face distance between two (2) surfaces of the pair, to which a composite surface of the configuration model belongs, being as an original for producing the each internal-surface model, thereby giving this plate thickness value as to be the thickness attribute of the internal-surface model of target (see "face-to-face distance" as "P_0" to "P_1" and "plate thickness" as "shell thickness, d" in col. 4, line 65 to col. 5, line 14 and Fig. 5).

43. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tonooka taken in view of Kawaguchi as applied to claim 3 above, and further in view of Mobley et al. (Mobley hereinafter), An Object Oriented Approach to Geometry Defeaturing for Finite Element Meshing.

44. As to claim 4, while the Tonooka–Kawaguchi apparatus teaches almost all of the instant invention as applied to claim 3 above, the Tonooka–Kawaguchi apparatus lacks emphatic displaying means for displaying the top side surface, the bottom side surface and the rib surface, which are acknowledged by said top/bottom side rib attribute acknowledging means, with making emphasis thereon.

45. Mobley discloses a top/bottom rib attribute emphatic displaying means for displaying the top side surface, the bottom side surface and the rib surface, which are acknowledged by said top/bottom side rib attribute acknowledging means, with making emphasis thereon (see Fig. 11 in page 560 and Fig. 13 in page 561). Examiner notes that both Fig. 11 and Fig. 13 show "emphatic displaying" as "highlighting" in the original pdf file, even though highlighting is not noticeable in the printout of the original pdf file.

46. Tonooka, Kawaguchi, and Mobley are analogous art because they are both related to CAD/CAE software.

47. Therefore, it would have been obvious to one of ordinary skill in this art at the time of invention by applicant to utilize the emphatic displaying means of Mobley in the Tonooka–Kawaguchi apparatus because Mobley presents an object-oriented approach to automatic geometry defeaturing to overcome accuracy deficiencies and to remove excessive detail in CAD data (see page 547, lines 3–5), and as a result, Mobley reports

the following two improvements over his prior art: a framework for automatically meshing real world 3D CAD models with tetrahedral, which recognizes undesirable features in CAD models that can make meshing fail, give poorly shaped elements, or give too many elements; and two types of defeaturing: geometry-based defeaturing and FE (finite element) model-based defeaturing, which reduce model size and increase mesher robustness. In addition, Mobley illustrates the advantages of using data abstraction to represent not only the CAD geometry and topology but the finite element model as well (see page 562, 1st and 2nd paragraphs).

Conclusion

48. Examiner would like to point out that any reference to specific figures, columns and lines should not be considered limiting in any way, the entire reference is considered to provide disclosure relating to the claimed invention.

49. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan C. Ochoa whose telephone number is (571) 272-2625. The examiner can normally be reached on 7:30AM - 4:00 PM.

50. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

51. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*** 8/31/06

PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

9/1/06